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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/319,384	06/04/1999	TAKASHI ECHIGO	Q54629	2943

7590

07/28/2003

SUGHRUE MION ZINN MACPEAK & SEAS
2100 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 200373202

EXAMINER

PRATS, FRANCISCO CHANDLER

ART UNIT	PAPER NUMBER
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1651

DATE MAILED: 07/28/2003

21

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/319,384

Applicant(s)

ECHIGO ET AL.

Examin r

Francisco C Prats

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5,7,8,10-17 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5, 7, 8, 10-17 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

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DETAILED ACTION

The amendment May 19, 2003, has been received and entered. The text of those sections of Title 35, U.S. Code, not included in this action can be found in a prior office action.

Claim 9 has been cancelled.

Claims 1, 5, 7, 8, 10-17 and 19 are pending.

Claim Rejections - 35 USC § 103

Claims 1, 5, 7-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haars et al (U.S. Pat. 4,432,291) in view of Conradie (U.S. Pat. 5,399,190).

Haars et al disclose wood binding compositions suitable for binding wood chips together to make particle board, said binding compositions comprising lignin or lignin sulfonate and laccase or catechol oxidase or peroxidase in an aqueous solution. See column 2, line 5, through column 4, line 2. Haars differs from the claims in that Haars' wood binding composition does not include the numerous additional additives recited in the claims. However, Conradie clearly discloses that metal soaps of long chain unsaturated fatty acids such as oleic and linoleic acids act as superior wood preservative agents. See column 1, lines 43-64. Conradie also discloses that the wood preservative compositions disclosed therein may contain any known insecticide

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and/or fungicide, such as pyrethroid, as well as carrier media such as xylene, as well as emulsifiers. See column 2, lines 21-39. Thus, Conradie demonstrates that the claimed additional metals, unsaturated fatty acids and other organics were in fact known wood preserving agents at the time of applicant's invention. Reasonably expecting that adding known wood preserving agents such as those disclosed in Conradie to the enzymatic binder of Haars would have conferred improved properties to Conradie's particle board product, the artisan of ordinary skill would have been motivated to have added known wood preserving agents such as disclosed by Conradie to the enzyme-containing wood binder of Haars.

Moreover, in view of Haars' disclosure of the suitability of peroxidases in the oxidative wood binding composition, the artisan of ordinary skill clearly would have recognized that the hydrogen peroxide required by Haars' peroxidases could have been readily generated enzymatically *in situ*, and would therefore require the presence of the peroxide-generating oxidase enzyme recited in claim 16. The artisan of ordinary skill, recognizing the suitability of generating hydrogen peroxide *in situ* would therefore have been motivated to have included in the enzymatic wood binding composition a peroxide-generating oxidase enzyme,

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as recited in claim 16. A holding of obviousness is therefore clearly required.

Claims 1, 5, 7, 8, 10-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haars et al (U.S. Pat. 4,432,291) in view of Conradie (U.S. Pat. 5,399,190), and in further view of Schneider et al (WO 95/01426).

As discussed above, claims 1, 5, 7-16 and 19 are either anticipated by Haars, or rendered obvious over Haars when viewed in light of Conradie. Neither Haars nor Conradie disclose the suitability of an enzyme obtainable from *Myrothecium*, as recited in applicant's claim 17, as the oxidase in the preparation of Haars' wood binding composition. However, Schneider discloses numerous compositions for various applications, said compositions comprising an enzyme which may be a laccase, catechol oxidase, bilirubin oxidase from *Myrothecium*, or monophenol monooxygenase (see p. 19, lines 1-27). Schneider's compositions also comprise lignin (see p. 6, line 35 through p.7, line 4), for use in polymerizing lignin so as to prepare wood composites such as chipboard or fiberboard (see claim 18, at p. 46, line 29 through p. 47, line 2). Thus, the artisan of ordinary skill would have reasonably expected that Schneider's bilirubin oxidase from *Myrothecium* would have been useful to

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polymerize the lignosulfonate in Haars' wood binding composition, based on Schneider's disclosure of the polymerization of chemically similar lignin, which contains the same phenolic moiety as lignin sulfonate required for oxidative enzymatic polymerization. Based on this reasonable expectation of the suitability in Haars' composition of Schneider's bilirubin oxidase from *Myrothecium*, the artisan of ordinary skill would have been motivated to have included Schneider's bilirubin oxidase from *Myrothecium* in Haars' wood binding composition. A holding of obviousness is therefore required.

Response to Arguments

All of applicant's argument regarding this ground of rejection has been fully considered but is not persuasive of error. Applicant argues initially that the enzymes disclosed in Haars are different than those recited in the claims. However, applicant provides no evidence in support of this assertion. On the current record it is clear that Haars obtains an enzyme having the identical catalytic activity as that claimed, from the same microorganism disclosed by applicant as being a suitable source for the enzyme. Thus, applicant's argument that the enzymes are somehow non-obviously different contradicts, and is inconsistent with, applicant's own disclosure that the

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claimed enzyme can be obtained from certain organisms. It is clearly improper for applicant to first state that the enzymes can be obtained from a specific source, then argue that they cannot.

Moreover, because they are obtained from the same organisms disclosed by applicant as being suitable sources of the enzymes, the artisan of ordinary skill clearly would have expected the enzymes obtained by Haars to possess properties very similar to those claimed, even if it were conceded that the prior art enzymes and claimed enzymes were not identical. The fact that Haars does not mention the pH ranges employed does not mean, as argued by applicant, that the pH optima of Haars' enzymes is different than the optimum recited in the claims. Rather, on the current record it appears that applicant has discovered a latent property of Haars' enzymes, the pH optimum. In this respect note specifically that the recognition of a latent property in the prior art does not amount to demonstration of an unexpected result which confers patentability on claims under examination. See MPEP § 2145, subsection II, and cases cited therein; e.g. *In re Wiseman*, 596 F.2d 1019, 201 USPQ 658 (CCPA 1979), cited for the proposition that "mere recognition of latent properties in the prior art does not render nonobvious an otherwise known invention." Because applicant has failed to

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distinguish the claimed enzymes from the prior art enzymes by demonstrating any novel or non-obvious property, the rejections of record must be maintained.

Further still, while applicant argues that the combination of references uses improper hindsight, it is respectfully pointed out that Haars discloses the presence of a variety of metal salts present in the enzyme-containing, and substrate-containing, culture milieu used to produce the enzyme. Haars at column 4, lines 5-38. Moreover, as discussed above, each of the additional ingredients recited in the claims is disclosed by Conradie as being a desirable wood additive. See Conradie at column 1, lines 43-64 (metal soaps of long chain unsaturated fatty acids such as oleic and linoleic acids act as superior wood preservative agents). See also, Conradie at column 2, lines 21-39 (wood preservative compositions may contain any known insecticide and/or fungicide, such as pyrethroid, as well as carrier media such as xylene, as well as emulsifiers). Thus, motivation for adding the claimed ingredients to Haars' wood binding composition comes from Conradie's disclosure that such ingredients are beneficial to wood-containing compositions.

In sum, in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on

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obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, as is the case here, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

With respect to the additional combination of Schneider, with Conradie and Haars, it is again pointed out, as discussed above, that Schneider suggests the claimed use of the claimed enzyme from *Myrothecium* in Haars' process. In short, Haars requires the presence of an oxidase capable of polymerizing the phenol groups in lignin sulfonate. Schneider clearly discloses an enzyme, bilirubin oxidase from *Myrothecium*, which polymerizes lignin. Thus, claim 17 recites the use of an enzyme which the artisan of ordinary skill, based on Schneider's disclosure, would have reasonably expected to be suitable in Haars' process. Claim 17 must therefore be considered obvious, absent some demonstration that the specific enzyme functions unexpectedly. The rejection of record must therefore be maintained.

No claims are allowed.

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THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

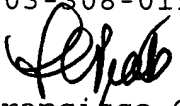
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Francisco C Prats whose telephone number is 703-308-3665. The examiner can normally be reached on Monday through Friday, with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G Wityshyn can be reached on 703-308-4743. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.


Francisco C Prats
Primary Examiner
Art Unit 1651

FCP
July 25, 2003